

ABSTRACT

The invention provides methods for isolating a modified peptide from a complex mixture of peptides, the method comprising the steps of: (a) obtaining a proteinaceous preparation from an organism, wherein the preparation comprises modified peptides from two or more different proteins; 5 (b) contacting the preparation with at least one immobilized modification-specific antibody; and (c) isolating at least one modified peptide specifically bound by the immobilized modification-specific antibody in step (b). The method may further comprise the step of (d) characterizing the modified peptide isolated in step (c) by mass spectrometry (MS), tandem mass 10 spectrometry (MS-MS), and/or MS³ analysis, or the step of (e) utilizing a search program to substantially match the spectra obtained for the modified peptide during the characterization of step (d) with the spectra for a known peptide sequence, thereby identifying the parent protein(s) of the modified peptide. Also provided are an immunoaffinity isolation device comprising a 15 modification-specific antibody, and antibodies against novel UFD1 and PTN6 phosphorylation sites.